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ward to Monterey Bay. Species are described under 22 genera, Parmelia being the largest with 14 species; and new species are characterized under Cetraria, Usnea, Parmelia, and Gyrophra.—J. M. C.

Die natürlichen Pflanzenfamilien.—Part 223 continues the families of mosses by BROTHERUS, Hedwigiaceae being concluded; Fontinalaceae, Climaciaceae, Cryphaeaceae, Leucodontaceae, and Prionodontaceae being completed; and Spiridentaceae being begun.

The first part of the second supplement has also appeared, including the literature of 1899–1904 in reference to gymnosperms and monocotyledons, with a few pages beginning the dicotyledons.—J. M. C.

Index Filicum.—The sixth, seventh, and eighth fascicles of CHRISTENSEN'S work[9] have appeared with great promptness, carrying the references from *Gleichenia Cunninghamii* to *Polypodium basiattenuatum.* It should be urged upon colleges and libraries that so useful and thankless a task should be supported by adequate subscriptions.—J. M. C.

Text-book of pharmacognosy.—A new textbook of pharmacognosy by GILG[10] is worthy an English edition. It is the best illustrated text for ordinary student use that has appeared. The work would be still more valuable if a greater number of cuts showing the anatomical elements as they appear in powder had been included.—RAYMOND H. POND.

Plants of Bermuda.—A list of plants collected by the author in Bermuda in 1905 has been published privately by A. H. MOORE of Cambridge, Mass. The pamphlet contains 22 pages, 3 plate reproductions of photographs, and descriptions of new species of Rhynchospora and Elaeodendron.—J. M. C.

Das Pflanzenreich.[11]—Part 24, issued in January of this year, contains the Aponogetonaceae by KRAUSE and ENGLER, 22 species being recognized.—J. M. C.

NOTES FOR STUDENTS.

Items of taxonomic interest.—J. CARDOT continues (Bull. Herb. Boiss. II. **6**:1–17. 1906) his account of the mosses collected by the Swedish Antarctic Expedition, describing nineteen new species from S. Georgia Island and 5 from the Antarctic lands.—PALIBRIN adds (*idem* 18–22) 5 new species to the Chinese flora. —H. CHRIST lists (*idem* 45–58) the ferns of Costa Rica, which is astonishingly rich, and describes 8 as new.—I. THÉRIOT (Bull. Acad. Int. Geog. Bot. **16**:40. 1906) gives a 2-line diagnosis of two new Leptodontia from New Granada, with other new species from China.—E. L. GREENE characterizes (Ottawa Nat. **19**:197. 1906) a new Antennaria from Athabasca.—F. VON HÖHNEL describes (Ann. Mycologici **3**:404. 1905) a new genus, *Unguicularia*, near Pezizella, and 3 new species of fungi.—E. BRAINERD adds 2 new names to New England violets (Rhodora **7**:245–7. 1905).—M. L. FERNALD (*idem* 250) differentiates from *Cynoglossum virginicum* a new species, *C. boreale*.—J. A. CUSHMAN concludes (*idem* 251–266) his enumeration of the desmids of New Hampshire, listing 253 species and varieties against the 74 hitherto reported. He describes several new ones.—M. L. FERNALD (*idem* **8**:11 and 22. 1906) describes a new Geum from Vermont and a new Salix from Maine; attempts to clear up (*idem* 31) the American forms called *Arenaria verna*, including a new species; and characterizes (*idem* 69–71) 2 new species of Streptopus.—In a presentation of Astragalus and its segregates as represented in Colorado, P. A. RYDBERG (Bull. Torr. Bot. Club **32**:657–668. 1905) recognizes 17 genera, 7 of which (*Atelophragma*, *Jonesiella*, *Phacopsis*, *Ctenophyllum*, *Microphacos*, *Cnemidophacos*, and *Diholcos*) are characterized as new; and in his 16th paper on the Rocky Mt. flora (*idem* **33**:137–161. 1906) he describes new species under Rumex, Sphaeralcea, and Senecio (6); establishes as new genera *Crunocallis*, *Naiocrene*, *Erocallis* (all three near Claytonia), *Cornella* (Cornaceae), *Oreochrysum*, *Platyschkuhria*, *Chamaechaenactis*, and *Prenanthella* (all four Compositae).—In his 6th paper on the Hepaticae of Puerto Rico (*idem* 1–25), A. W. EVANS establishes *Rectolejeunea* and *Cystolejeunea* as new genera.—In a 5th paper describing new species of Uredineae (*idem* 27–34) J. C. ARTHUR establishes the new genus *Ceratelium*.—J. K. SMALL (*idem* 51–57), in a 2d paper on N. Am. Polygonaceae, describes new species under Eriogonum (8) and Polygonum.—L. M. UNDERWOOD and F. E. LLOYD (*idem* 101–124) describe 17 new species of Lycopodium from the American tropics.—L. M. UNDERWOOD (*idem* 189–205) characterizes new species of pteridophytes from the United States under Asplenium (2), Stenochlaena, Tectaria, and Selaginella.—R. SCHLECHTER (Engler's Bot. Jahrb. **39**:1–100. 1906) in a study of the flora of New Caledonia establishes 3 new genera (*Coilochilus*, *Pachyplectron*, *Gonatostylis*) of Orchidaceae and one (*Trilocularia*) of Balanopsidaceae.—U. DAMMER (*idem* 20–22) describes *Actinokentia* and *Nephrocarpus* as new genera of New Caledonian palms.—W. SUKSDORF (Oesterr. Bot. Zeits. **12**:5–7, 26, 27. 1906) has described new species of Washington plants under Sanicula, Lomatium, Antennaria, Lasthenia, Pyrola, Navaretia, Orthocarpus, and Aphyllon (2).—A. A. HELLER (Muhlenbergia **2**:1–164. 1905–6) has published an account of his Californian collections during 1905, including descriptions of new species under Eriogonum (3), Montia, Delphinium, Ranunculus, Thysanocarpus (2), Lithophragma, Ribes, Amelanchier, Lupinus (14), Vicia, Acrolasia, Boisduvalia, Glaux, Apocynum, Gilia (4), Solanum, Pentstemon, Castilleia, Orthocarpus, and Scorzonella; and of 2 new genera, *Hesperastragalus* (Leguminosae) and *Malacolepis* (Compositae).—MAX FLEISCHER (Hedwigia **45**:65–87. 1906), in concluding his paper on new families, genera, and species of mosses, describes *Baldwiniella*, *Homaliodendron*, *Pinnatella*, and *Penzigiella* as new genera of

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[9] CHRISTENSEN, C., Index Filicum, etc. Fasc. 6–8. Copenhagen: H. Hagerups Boghandel. 1905 and 1906. Each 3*s.* 6*d.*

[10] GILG, ERNEST, Lehrbuch der Pharmacognosie. 8vo, pp. vii+368. Berlin: Julius Springer. 1905.

[11] ENGLER, A., Das Pflanzenreich. Heft. 24, Aponogetonaceae by K. KRAUSE assisted by A. ENGLER. pp. 22, *figs. 9 (71). M* 1.20. Leipzig: Wilhelm Engelmann. 1906.

Neckeraceae.—U. Dammer (Notizblatt König. Bot. Gart. **4**:171–173. 1905) describes a new genus (*Kinetostigma*) of Guatemalan palms.—E. Janczewski (Bull. Acad. Sci. Cracovie, pp. 13. Jan. 1906), in his second paper on Ribes, presents the species of the subgenera Ribesia and Coreosma, including new Californian and Mexican species.—A. Borzi (Notarisia **21**:14–16. 1906) describes a new genus (*Zoddaea*) of Chlorophyceae (Chroolepidaceae) from a Mediterranean island.

Heredity.—A lecture on heredity and the origin of species by MacDougal[12] not only presents the author's views regarding the several more prominent evolution hypotheses, but also makes the first public announcement of important results of his own researches on the causes of mutation.

While not denying the possibility of other means of production of species, he holds that hybridization and mutation are the only *demonstrated* methods by which new species have arisen. He attributes a popular belief in the Neo-Lamarckian hypothesis to the supposed effects of garden practice, and these supposed effects are supposed to be due to the prevalence of vicinism and the vegetative propagation of bud-sports. Several "unsurmountable objections" are opposed to the Neo-Darwinian hypothesis of natural selection of slight variations as a universal method. He would distinguish orthogenesis from determinate variations, limiting the former to an internal perfecting force which evolves rudimentary organs and develops them to functional structures without any reference to selection; while the latter he would allow as a part of every method of evolutionary procedure, in that no structure may vary to any other structure too much unlike itself. This is a very important discrimination theoretically, but it is clear that in most cases a practical distinction between orthogenesis and determinate variation as here defined would be an impossibility, since the "morphological possibilities" may be estimated only by what does appear.

The effects of isolation and of self- and cross-fertilization are held to be problematical.

The greater part of the lecture is naturally devoted to the mutation cultures of De Vries and himself. Besides *Oenothera Lamarckiana*, the following three species have been shown to be in a state of mutation: *O. grandiflora*, *O. biennis*, and *O. cruciata*. "Parallel mutations" are exemplified by two observed origins of *nanella*-forms, i. e., forms with linear petals. A consideration of the mutating and mutant species leads to the conclusion that plants are made up of complex groups of unit characters, that some of these characters may exist for an indefinite time in a latent state, that a new character that departs widely from the parental condition is more variable than the homologous character of the parent species, and that at the same time it is less closely correlated.

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[12] MacDougal, D. T., Heredity and the origin of species. Lecture given before the Barnard Botanical Club, Columbia University, December 18, 1905. The Monist, Jan. 1906. 32 pages. Printed and distributed in advance.